

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor element-mounting board, comprising:
 - arranging a plurality of conductive members in a mold;
 - injecting an electrically insulating resin material into the mold after the conductive members are arranged therein so that the conductive members and the resin material are integrally molded to form a base member having a semiconductor element-mounting face and a circuit board-mounting face opposite the semiconductor element-mounting face, said arranging of the conductive members comprising orienting the conductive members in the mold so that the conductive members are substantially orthogonal to the semiconductor element-mounting face and the circuit board-mounting face and extend linearly through an interior of the base member between the semiconductor element-mounting face and the circuit board-mounting face;
 - mounting and electrically connecting a semiconductor element to the semiconductor element-mounting face by a flip-chip mounting process; and
 - mounting and electrically connecting the circuit board-mounting face to a circuit board.
2. The method of claim 1, further comprising forming a wiring pattern on the semiconductor element-mounting face of the base member and on the circuit board-mounting face of the base member so that the wiring pattern is electrically connected to each end of each of the conductive members, the semiconductor element is then mounted and electrically connected by the flip-chip mounting process to the wiring pattern formed on the semiconductor element-mounting face, and the wiring pattern on the circuit board-mounting face is mounted and electrically connected to the circuit board.
3. The method of claim 2, wherein said forming of the wiring pattern comprises one of plating a conductor on the semiconductor element-mounting face of the base member and on the circuit board-mounting face of the base member and then etching the plated conductor, and selectively plating only a portion of the semiconductor element-mounting face of the base member and on the circuit board-mounting face of the base member.

4. The method of claim 2, wherein said forming of the wiring pattern comprises printing and heating a conductive paste on the semiconductor element-mounting face of the base member and on the circuit board-mounting face of the base member.

5. The method of claim 1, further comprising roughening a circumferential surface of each of the conductive members prior to arranging the conductive members in the mold so as to increase adhering forces between the resin material and the conductive members.

6. The method of claim 1, wherein said injecting comprises injecting the resin material in an axial direction parallel to the longitudinal axes of the conductive members through at least two injection openings arranged symmetrically with respect to the conductive members.

7. The method of claim 6, wherein the mold includes a first holding plate for holding a first axial end of each of the conductive members, the injection openings being formed in the first holding plate, includes a second holding plate for holding a second axial end of each of the conductive members and being operable to move in the axial direction, and includes a pressure regulation mechanism for biasing the second holding plate in the axial direction in response to a compression or extension of the conductive members due to said injection of the resin material; further comprising, during said injecting of the resin material, moving the second holding plate in the axial direction using the pressure regulation mechanism in response to the compression/extension of the conductive members due to said injection of the resin material, thereby restricting bends in the conductive members.

8. The method of claim 1, wherein said injecting comprises injecting the resin material in an axial direction parallel to the longitudinal axes of the conductive members through a plurality of injection openings formed in an end of the mold closest to and supporting a first end of each of the conductive members.

9. The method of claim 1, further comprising:

after said injecting of the resin material, forming a projecting portion of the conductive member projecting from the circuit board-mounting face of the base member; and
performing a plastic treatment on the projecting portion so as to form a land to be connected to the circuit board.

10. The method of claim 9, wherein said forming of the projecting part comprises:
leveling the base member including the conductive members so that a thickness of the base member is equal to a length of each of the conductive members; and
after said leveling, removing only a portion of the resin material of the base member in a thickness direction of base member.

11. The method of claim 10, wherein said removing of the portion of the resin material comprises one of wet etching, dry etching, sandblasting, and machining.

12. The method of claim 1, wherein said arranging of the plurality of conductive members in the mold comprises arranging only the conductive members in the mold, and the electrically insulating resin material is injected into the mold after only the conductive members are arranged in the mold.

13. The method of claim 1, further comprising:
machining at least one of the semiconductor element-mounting face and the circuit board-mounting face of the base member after the injecting; and
after said machining, forming a wiring pattern on the semiconductor element-mounting face of the base member and on the circuit board-mounting face of the base member so that the wiring pattern is electrically connected to each end of each of the conductive members, the semiconductor element is then mounted and electrically connected by the flip-chip mounting process to the wiring pattern formed on the semiconductor element-mounting face, and the wiring pattern on the circuit board-mounting face is mounted and electrically connected to the circuit board.

14. The method of claim 1, further comprising, after said injecting of the resin material, cutting a base member block molded by injecting the resin material into the mold with the conductive member arranged therein, in a direction orthogonal to the longitudinal axes of the conductive members so as to form a plurality of base members.

15. The method of claim 1, further comprising applying an adhesion-increasing agent to a circumferential surface of each of the conductive members prior to arranging the conductive members in the mold so as to increase adhering forces between the resin material and the conductive members.